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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,639	12/19/2001	Sung-Muk Lim	9903-44	1485

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MARGER JOHNSON & McCOLLOM, P.C.
1030 S.W. Morrison Street
Portland, OR 97205

EXAMINER

TRAIL, ALLYSON NEEL

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/027,639

Applicant(s)

LIM ET AL.

Examiner

Allyson N Trail

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/19/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Amendment

1. Receipt is acknowledged of the amendment filed August 23, 2004.

Priority

2. The present application claims priority from Korean Patent Application No. 2001-2569, filed January 17, 2001.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-7, 25, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwakiri et al (6,377,866).

Iwakiri et al teaches the following in regards to claims 1, 7, and 25:

Figure 1 shows the following:

A reference character set is inputted via the keyboard 2a. The reference character set is then shown on the screen 2b and the character set information is sent to the information processing device 1. As seen on the screen 2b, the character set may include a barcode or letters. The semiconductor wafer 10 is placed on a turntable 4. The laser head 21, which is connected to the engraving device 2, engraves the markings onto the wafer 10. The turntable spins to allow the reading camera 31, to read the engraved markings off of the wafer. The image read with the reading device appears on the display screen 3a and is also sent to the information processing device for comparison. In this method the features of the markings are extracted and the features produce character data (as seen on the screen 3a).

Iwakiri et al teaches the following in regards to claims 2 and 26:

Figure 2 shows a block diagram disclosing steps of determining if the marking is defective and classifying it as so. The steps include comparing the character data to the reference character set.

Iwakiri et al teaches the following in regards to claims 3 and 4:

As discussed above, the character set is inputted directly using a keyboard.

Iwakiri et al teaches the following in regards to claims 5 and 6:

"Engraving information for engraving the identification mark is inputted into the engraving device body 2 via a keyboard 2a, a computer mouse (not shown) or the like." (Col. 3, lines 1-3). As shown in figure 1, the engraving information is shown as barcode.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8, 18-22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwakiri et al (6,377,866) in view of Schemmel et al (5,943,551).

Iwakiri et al's teaches are discussed above. Iwakiri et al fails to teach an optical character recognition unit configured to recognize the character images.

Schemmel et al teaches the following in regards to claim 18:

"An apparatus and method for detecting defects on silicon dies on a silicon wafer (16) comprising an image acquisition system (10) and a computer (32) that determines a statistical die model by analyzing a random selection of dies (42) within a die matrix (37) and compares the statistical die model to matrices of silicon dies (38) to determine which silicon dies (38) have surface defects, is disclosed." (Abstract).

"The image acquisition system can further include a high resolution microscope for manually inspecting silicon dies, if desired. The image acquisition system of the present invention can also include an object character recognition (OCR), a bar code reader or other system that provides the computer with information about the silicon wafer. The computer of the present invention can be connected to a display unit that displays the die images acquired by the image acquisition system." (Col. 2, lines 20-28).

The limitations of claims 19-24 are taught above by Iwakiri et al.

In view of Schemmel et al's teachings it would have been obvious to one of ordinary skill in the art at the time the invention was made to an optical character recognition unit to recognize the character image. The method of optical character recognition and capturing an image of characters using an image capturing device are art recognized functional equivalences of each other. While Iwakiri et al uses a camera to recognize the character image, an OCR unit would cut down on the processing time of recognizing the image and also make the character recognition even more precise.

7. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwakiri et al (6,377,866) in combination with Schemmel et al (5,943,551) and in further view of Caldwell et al (5,575,136).

Iwakiri et al's teachings in combination with Schemmel et al's teachings are discussed above. The combination however fails to teach transferring the semiconductor product onto a carrier tape.

The limitations of claims 16 and 17 are taught above by Iwakiri et al.

Caldwell et al teaches the following in regards to claim 15:

Figure 2 shows the semiconductor device being placed on the carrier tape 10.

In view of Caldwell et al's teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Caldwell et al with the combination of the teachings by Iwakiri et al and Schemmel et al. The combination of Iwakiri et al and Schemmel et al's teachings teach a method of detecting defective markings on a semiconductor wafer during the manufacturing process.

Caldwell et al teaches transferring the semiconductor product onto a carrier tape. One would be motivated to perform the transferring step simply because placing the product onto carrier tape is a part of a typical manufacturing process. Carrier tapes are generally used to protect and hold the semiconductor device in place while making any additional cuts, etching or placing the semiconductor onto a circuit board.

8. Claims 9-14 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwakiri et al (6,377,866) in combination with Schemmel et al (5,943,551) and in further view of Akamatsu (5,768,290).

Iwakiri et al's teachings in combination with Schemmel et al's teachings are discussed above. The combination however fails to teach testing external terminals of the semiconductor products.

Akamatsu teaches the following in regards to claims 9 and 27:

"When testing at the wafer level is completed and the step for carrying out a fuse program to determine a pass/failure is completed, the semiconductor integrated circuit devices on the wafer are separated into chips in a dicing step. The semiconductor integrated circuit device formed as a chip is packaged (molded) in a mold step S3. Following completion of mold step S3, final testing for each individual semiconductor integrated circuit device is carried out (step S4). In this final test step S4, a signal is input/output via an external pin terminal for each semiconductor integrated circuit device to carry out a function test similar to that carried out at the wafer level with respect to each input/output terminal (a pin terminal is electrically connected to respective internal signal input/output pads: when non-defective)." (Col. 2, lines 19-32).

The limitations of claims 10-14 are taught above by Iwakiri et al.

In view of Akamatsu's teachings it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Akamatsu with the combination of the teachings by Iwakiri et al and Schemmel et al. The combination of Iwakiri et al and Schemmel et al's teachings teach a method of detecting defective markings on a semiconductor wafer. The purpose is to classify defective semiconductors in order to avoid dispensing the defective semiconductors to the public. Akamatsu teaches testing the actual semiconductor wafer and not the identifying marking that is on the wafer. One would be motivated to also test the actual semiconductor before dispensing the semiconductor to the public along with testing the identifying marking which is present on the surface of the wafer. It is clear that the teachings of both Iwakiri et al and Schemmel et al are aimed at dispensing a working and functioning semiconductor and therefore testing the actual semiconductor would be an obvious step before dispensing the product.

Response to Arguments

9. Applicant's arguments filed August 23, 2004 have been fully considered but they are not persuasive to overcome the rejection of claims 1-7, 25, and 26 as being anticipated by Iwakiri et al (6,377,866). Arguments regarding claims 8, 10, and 16-24 are also not persuasive. The limitation of transferring the semiconductor product onto carrier tape was not addressed in the previous office action, however is now rejected by the combination of Iwakiri et al, Schemmel et al and Caldwell et al. In regards to claims 1-7, 25, and 26, as shown in figure 1, the camera reads the characters and projects the

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characters on the screen. Additionally, to reading the characters, the character data is sent to the processing device (1). It is disclosed by Iwakiri et al that the processing device may be internal to the reading device. The processing device compares the character data to the engraving data. The comparison is preformed with comparing the two different images. Because the images include characters, it is inherent that the characters are recognized by the reading device. Additionally, Iwakiri et al teaches the recognizing the characters individually is key to the comparison process. Iwakiri et al teaches that prior art fails to inspect the characters themselves and explains this as a flaw. "Moreover, the barcode-reading inspection does not inspect the characters themselves, and thus even if the character of the identification mark of the semiconductor wafers not taken out in the image inspection is defective, the semiconductor wafer bearing the defective mark will be delivered to the market." (Col. 1, lines 62-67). In regards to claims 9-14 and 16-24, although the OCR device is not used for detecting defective markings, the OCR device is used to acquire character information from a semiconductor. Iwakiri et al teaches comparing reference characters with actual characters. Using the OCR device taught by Schemmel would only making the character comparison even more precise.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Allyson N. Trail* whose telephone number is (571) 272-2406. The examiner can normally be reached between the hours of 7:30AM to 4:00PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee, can be reached on (571) 272-2398. The fax phone number for this Group is (703) 872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [allyson.trail@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Allyson N. Trail
Patent Examiner
Art Unit 2876
November 14, 2004

Jared J. Furman
JARED J. FURMAN
PRIMARY EXAMINER